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| 3M INNOVATIVE PROPERTIES COMPANY | | | HU, HENRY S | |
| PO BOX 33427 | | | ART UNIT | |
| ST. PAUL, MN 55133-3427 | | | PAPER NUMBER | |
| | | | 1713 | |

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,231

Applicant(s)

EPSCH ET AL.

Examiner

Henry S. Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 8-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-15 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3-5-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-7, drawn to an aqueous fluoropolymer dispersion with low or no fluorinated surfactant, classified in class 524, subclass 805.

II. Claims 8-15, drawn to a process of making aqueous fluoropolymer dispersion with low or no fluorinated surfactant, classified in class 526, subclass 242.

2. The inventions are distinct, each from the others because of the following reasons:

Inventions II and I is related as process of using (or making) and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case Group II is not limited to use or prepare aqueous fluoropolymer dispersion with low or no fluorinated surfactant as specified in Group I. The only requirement is that monomers are soluble in a mixture of medium and organic initiator as well as the components mixing in Group II need to be compatible, therefore the process of Group II does not always produce or use the composition useful in Group I. Additionally, the mixing in Group II could be made, for

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example, by premixing with step addition or continuous addition with or without help of some other co-solvent.

3. Because these inventions are distinct for the reasons given above shown as different subject matters and the search required for each group is not required for other groups have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with **Brian E. Szymanski on May 19, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-7.** Affirmation of this election for Group I, claims 1-7 must be made by applicant in replying to this Office action. **Claims 8-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.**

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

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5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. *The limitation of parent **Claim 1** of the present invention relates to an aqueous fluoropolymer dispersion comprising a melt processible fluoropolymer in an amount of at least 25% by weight based on the weight of the aqueous fluoropolymer dispersion and a **fluorinated surfactant** having a molecular weight of not more than 1000g/mol in an amount of **not more than 100ppm** based on the weight of fluoropolymer solids or being free of said fluorinated surfactant, said aqueous fluoropolymer dispersion having a conductivity of at least 200 μ S/cm. See other limitations of dependent **Claims 2-7**.*

7. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by McCarthy et al. (US 5,955,556).

Regarding the limitation of parent **Claim 1**, McCarthy et al. disclose the preparation of a stable aqueous self-dispersible fluoropolymer dispersion of up to 48% polymer solids in water in the absence of surfactant due to improved conversion rate of monomer to polymer (abstract, line 1-11). McCarthy et al. further disclose during polymerization process, fluoropolymer macromolecules are produced having inorganic, “surfactant-like” functional end groups which impart excellent latex stability to the polymer even these end groups are present in very

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low concentration (column 6, line 61-65). It is noted that the above-mentioned type end groups are ionic type and will be certainly solvated in water, therefore the dispersions made by McCarthy carry the claimed conductivity.

8. Regarding **Claim 3**, McCarthy et al. disclose that various types of commercially available surfactants may optionally be pre-charged or batchwise added, and it includes **non-ionic surfactants** (column 8, line 5-13).

Regarding **Claims 4-5**, McCarthy et al. disclose that suitable cationic surfactants such as the salts of fluorinated **alkyl quaternary ammonium iodides** can be included (column 8, line 17-18).

Regarding **Claim 6**, the self-dispersible dispersion made by McCarthy can be **surfactant-free**. However, surfactants mentioned in above-mentioned Claims 3-5 can be added in an amount from **50 ppm to 5,000 ppm or from 0.01% to 5%** (column 8, line 24-36; column 9, line 17-20).

Regarding **Claim 7**, the polymer solids in dispersions can be up to **48 % by weight** (abstract, line 8).

The remaining **Claim 2** is thereby rejected with the same reason as applied to the rejection of Claims 1 and 3-7.

9. Claims 1-2 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Oxenrider et al. (US 5,453,477).

Regarding the limitation of parent **Claim 1**, Oxenrider et al. disclose preparation of stable aqueous fluoropolymer dispersion in the absence of soaps or surfactants due to improved wettability of polymer particles (abstract, line 1-12; column 3, line 18-23; column 16, line 18-31). Oxenrider et al. further disclose the polymers are CTFE homopolymer and its copolymers (column 3, line 59 – column 4, line 5; column 7, line 42-57). The amount of polymer solids in dispersions disclosed in working examples (column 10, line 16 – column 14, line 64) is overlapping the claimed amount. It is noted that iron ion in 10-1000 ppm is presented in the above-mentioned preparation, it is ionic type and will be certainly solvated in water (column 3, line 23-34; column 10, line 57-59), therefore the dispersions made by Oxenrider carry the claimed conductivity.

10. Regarding **Claim 6**, the CTFE fluoropolymer dispersions made by Oxenrider are **surfactant-free or soap-free**.

The remaining **Claims 2 and 7** are thereby rejected with the same reason as applied to the rejection of Claims 1 and 6.

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11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oxenrider et al. (US 5,453,477) in view of McCarthy et al. (US 5,955,556).

Regarding the limitation of **Claims 3-5** which are dependent from Claim 1, the discussion of the disclosure of the prior art of Oxenrider for Claims 1-2 and 6-7 of this office action is incorporated here by reference. Oxenrider is **silent about specifically using non-ionic surfactant for Claim 3 as well as water-soluble salt for Claims 4-5**. Regarding the limitation of **Claim 3**, McCarthy et al. teach that various types of commercially available surfactants may optionally be pre-charged or batchwise added, and it includes non-ionic surfactants (column 8, line 5-13). Regarding the limitations of **Claims 4-5**, McCarthy et al. disclose that suitable

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cationic surfactants such as the salts of fluorinated alkyl quaternary ammonium iodides can be included (column 8, line 17-18). The advantage is such addition of conventional surfactants in the preparation of dispersions will effectively improve the stability of aqueous dispersion (column 8, line 5 – column 9, line 20).

In light of the fact that **polymeric dispersions produced by Oxenrider and McCarthy, are containing the same type of fluoropolymers, which can be self-dispersible**. Therefore, one having ordinary skill in the art would have found it obvious to add commercially available conventional surfactants in the course of polymerization or post polymerization, specifically non-ionic surfactant and cationic surfactant, as taught by McCarthy with an advantage to obtain more stabilized aqueous fluoropolymer dispersions in an effective way.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to aqueous fluoropolymer dispersion with low or no fluorinated surfactant:

US Patent No. 4,623,487 to Cope discloses that a process for recovery of fluorosurfactants from an aqueous medium (abstract, line 1-9). Although it is a high-yield recover and the surfactant can be reused (column 1, line 12-17). **Cope does not disclose the**

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recovery can obtain dispersion having fluorosurfactants less than 100 ppm. Additionally, no claimed solid amount or conductivity is disclosed.

14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

May 28, 2004



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SUPERVISORY PATENT EXAMINER
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